

CLAIMS

We Claim:

1. A control valve, comprising:
 - a) a housing defining a valve chamber;
 - b) a valving member disposed within said chamber and mounted for rotative movement between predetermined positions;
 - c) first and second inlet/outlet ports communicating with said chamber;
 - d) first and second intermediate ports communicating with said chamber;
 - e) said valving member defining flow control structure such that in one of its positions it cross communicates said first and second inlet/outlet ports, in a second position it cross communicates said one inlet/outlet port with one of said intermediate ports and communicates the other inlet/outlet port with the other intermediate port and in a third position it blocks flow through said chamber;
 - f) movement control member for controlling a range of rotation for said valving member; and,
 - g) changeable stop member cooperating with said movement control member for limiting movement in said valving member between predetermined positions.
2. The control valve of claim 1 wherein said movement control member can be installed in one of two positions, such that in one position said movement control member, in cooperation with said changeable stop member, limits movement of said valving member between said predetermined positions and in said other position, said movement control member in cooperation with said stop member limits movement

of said valving member between other predetermined positions.

3. The control valve of claim 1 wherein said valving member includes a pair of spaced apart disc-like members, a portion of one of said disc-like members including apertures which allow fluid flow above and below said one disc-like member.

4. The control valve of claim 1 wherein said housing includes:

a) first and second inlet/outlet fittings communicating with said first and second inlet/outlet ports, respectively; and,

b) first and second intermediate fittings communicating with said first and second intermediate ports, respectively.

5. The control valve of claim 4 wherein said housing and said fittings are integrally molded.

6. A bypass/diverter valve for controlling the communication of a fluid supply to and from a fluid treatment device, comprising:

a) a valve housing including a pair of inlet/outlet ports, one of said inlet/outlet ports connectable to a source of fluid to be treated, the other of said inlet/outlet ports for delivering treated fluid;

b) said housing further including another pair of ports, one of said ports of said second pair for delivering fluid to be treated to a water treatment device, the other

port of said second pair for receiving treated fluid from said treatment device;

c) said housing defining a cylindrical valve chamber including a cylindrical side wall and an end wall;

d) a cover member for enclosing said chamber;

e) a valve spool, at least a portion of which is mounted for rotation within said valve chamber;

f) said valve spool including a circular base, an axially spaced disc-like member and a diametral wall extending between said disc-like member and said base;

g) a portion of said disc-like member defining a surface spaced from, but in a confronting relationship with, a base surface defined by said base such that said base surface and said disc-like member confronting surface together with said diametral wall define a flow passage;

h) said disc-like member further defining openings for communicating a chamber region of said valve chamber adjacent said disc-like member with a spool region defined between said disc-like member and said base; and,

i) said cylindrical wall defining an opening in fluid communication with said chamber region, such that a flow path is established from said spool region through said openings and into one of said intermediate ports, through said wall opening, when said valve spool is in at least one predetermined position.

7. The bypass/diverter valve of claim 6 further including a movement control member coupled to said valve spool and cooperating with a moveable stop member to define the limits of rotative movement of said valve spool.

8. The bypass/diverter valve of claim 7 wherein said movement control member can be coupled to said valve spool in one of two positions and when coupled to said valve spool in the other of said two positions establishes different limits of movement for said valve spool.

9. The bypass/diverter valve of claim 6 wherein said valve spool carries a seal that sealingly engages the cylindrical side wall of said chamber.

10. The apparatus of claim 6 wherein said chamber end wall includes bearing structure for receiving and rotatably supporting a shaft structure defined by said valve spool, said engagement of said shaft structure with said bearing structure inhibiting relative lateral movement between said valve spool and said spool chamber.

11. The bypass/diverter valve of claim 7 wherein said stop member is positionable in one of two positions.

12. The bypass/diverter valve of claim 7 wherein said limits of rotative movement for said valve spool determine at least partially which of said inlet/outlet ports serves as an inlet and which of said inlet/outlet ports serves as an outlet.

13. The bypass/diverter valve of claim 12 wherein said the limits of movement for said valve spool determine, at least partially, which of said ports of said other pair deliver fluid to be treated to said treatment device and which of said ports of said other pair receive treated

fluid.

14. The bypass/diverter valve of claim 8 wherein said movement control member and said moveable stop member cooperate to provide four different limits of movement for said valve spool.

15. The bypass/diverter valve of claim 6 wherein one of said ports of said other pair communicates with said wall opening through a transfer chamber.

16. The bypass/diverter valve of claim 6 wherein said valve spool includes a radial wall extending outwardly from said diametral wall and connecting said base and said disc-like member.

17. The bypass/diverter valve of claim 6 wherein one of said inlet/outlet ports communicates with said valve chamber via an intermediate chamber.

18. A control valve, comprising:

- a) a housing including first and second inlet/outlet fittings and first and second fluid transfer fittings;
- b) said valve housing further defining a valve chamber in fluid communication with said fittings;
- c) a valve member having a stem and a valving portion, said valving portion being rotatably received within said valve chamber;
- d) said valving portion including a circular base and a disc member spaced above said circular base and connected therewith by a diametral wall;

e) a portion of said disc member and a portion of said base together with said diametral wall defining a first fluid flow path through said valve chamber when said valving portion is in predetermined positions within said valve chamber;

f) said valve chamber including an opening communicating with a region of said valve chamber above said disc member; and,

g) said disc member including an apertured portion for communicating said region of said valve chamber above said disc member with a valving member region defined between said disc member and said base, such that said valving region, said disc member apertures, said valve chamber region above said disc member, and said valve chamber opening establish a second fluid flow path isolated from said first flow path.

19. The control valve of claim 18 wherein said valve chamber opening communicates with one of said fluid transfer fittings.

20. The control valve of claim 19 wherein said valve chamber opening communicates with said fluid transfer fitting via a transfer chamber.

21. The control valve of claim 20 wherein said valve chamber is cylindrical and is at least partially defined by a cylindrical wall and a circular end wall.

22. The control valve of claim 21 wherein said valve chamber is enclosed by a cover member removably attached to

said valve housing.

23. The control valve of claim 22 wherein said circular end wall defines a bearing for receiving a shaft structure defined by said valve member and said cover rotatably supports said stem of said valve member.

24. The control valve of claim 21 wherein said valving portion carries at least one seal for sealingly engaging said cylindrical wall of said valve chamber.

25. The control valve of claim 24 wherein said seal is overmolded onto said valving portion of said valve member.

26. The control valve of claim 18 further including a movement control member positionable in one of two positions and a stop member positionable in one of two positions whereby four flow control configurations for said control valve are established.

27. The apparatus of claim 26 wherein said movement control member is installed in said cover and is coupled to said stem.

28. The control valve of claim 27 wherein said stop member is positionable in one of two apertures defined by said cover.